IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Original): An adsorption heat pump which comprises an adsorbate, an adsorption/desorption part having an adsorbent for adsorbate adsorption/desorption, a vaporization part for adsorbate vaporization which has been connected to the adsorption/desorption part, and a condensation part for adsorbate condensation which has been connected to the adsorption/desorption part, wherein the adsorbent, when examined at 25°C, gives a water vapor adsorption isotherm which, in the relative vapor pressure range of from 0.05 to 0.30, has a relative vapor pressure region in which a change in relative vapor pressure of 0.15 results in a change in water adsorption amount of 0.18 g/g or larger.

Claim 2 (Original): The adsorption heat pump as claimed in claim 1, wherein the adsorbent comprises a zeolite having a framework density in the range of from 10.0 T/1,000 $Å^3$ to 16.0 T/1,000 $Å^3$.

Claim 3 (Original): The adsorption heat pump as claimed in claim 2, wherein the adsorbent is an adsorbent having a pore diameter of from 3 Å to 10 Å and a heat of adsorption of from 40 kJ/mol to 65 kJ/mol.

Claim 4 (Currently Amended): The adsorption heat pump as claimed in ~~any one of claims 1 to 3, characterized in that~~ claim 1, the adsorbent is a zeolite containing at least aluminum, phosphorus, and a heteroatom in the framework structure.

Claim 5 (Original): The adsorption heat pump as claimed in claim 4, wherein the zeolite is one in which the proportions of atoms present therein are represented by the following expressions (1), (2), and (3):

$$0.001 \leq x \leq 0.3 \quad (1)$$

(wherein x represents the molar proportion of the heteroatom in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leq y \leq 0.6 \quad (2)$$

(wherein y represents the molar proportion of aluminum in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leq z \leq 0.6 \quad (3)$$

(wherein z represents the molar proportion of phosphorus in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure).

Claim 6 (Currently Amended): The adsorption heat pump as claimed in claim 4 ~~or 5~~, wherein the heteroatom is silicon.

Claim 7 (Currently Amended): The adsorption heat pump as claimed in claim 4 ~~or 5~~, wherein the heteroatom is silicon and the zeolite gives a ^{29}Si-MAS-NMR spectrum in which the integrated intensity area for the signals at from -108 ppm to -123 ppm is not more than 10% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.

Claim 8 (Original): The adsorption heat pump as claimed in claim 7, wherein the zeolite gives a ^{29}Si-MAS-NMR spectrum in which the integrated intensity area for the signals

at from -70 ppm to -92 ppm is not less than 25% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.

Claim 9 (Currently Amended): The adsorption heat pump as claimed in ~~any one of claims 2 to 8~~ claim 2, wherein the zeolite is one having the structure represented by CHA in terms of the code defined by International Zeolite Association (IZA).

Claim 10 (Currently Amended): The adsorption heat pump as claimed in ~~any one of claims 2 to 9~~ claim 2, wherein the adsorbent has a zeolite content of 60% by weight or higher based on the whole adsorbent.

Claim 11 (Currently Amended): The adsorption heat pump as claimed in ~~any one of claims 1 to 10~~ claim 1, wherein the adsorbent, when examined at 25°C, gives a water vapor adsorption isotherm in which the adsorption amount at a relative vapor pressure of 0.05 is 0.15 g/g or less.

Claim 12 (Currently Amended): An adsorption heat pump which comprises (a) an adsorbate, (b) an adsorption/desorption part having an adsorbent for adsorbate adsorption/desorption, (c) a vaporization part for adsorbate vaporization which has been connected to the adsorption/desorption part, and (d) a condensation part for adsorbate condensation which has been connected to the adsorption/desorption part,

~~characterized in that~~ wherein

(1) the adsorbent comprises a zeolite containing aluminum and phosphorus in the framework structure, and

(2) the adsorbent is a water vapor adsorbent having a region in which the adsorption amount difference as determined with the following equation is 0.15 g/g or larger in the range in which the relative vapor pressure $\phi 2b$ during adsorption operation in the adsorption/desorption part is from 0.115 to 0.18 and the relative vapor pressure $\phi 1b$ during desorption operation in the adsorption/desorption part is from 0.1 to 0.14:

Adsorption amount difference = Q2 - Q1

wherein

Q1 = adsorption amount at $\phi 1b$ as determined from a water vapor desorption isotherm obtained at a temperature (T3) used for desorption operation in the adsorption/desorption part

Q2 = adsorption amount at $\phi 2b$ as determined from a water vapor adsorption isotherm obtained at a temperature (T4) used for adsorption operation in the adsorption/desorption part,

provided that

$\phi 1b$ (relative vapor pressure during desorption operation in the adsorption/desorption part) = [equilibrium water vapor pressure at the temperature of coolant (T2) cooling the condenser]/[equilibrium water vapor pressure at the temperature of heat medium (T1) heating the adsorption/desorption part]

$\phi 2b$ (relative vapor pressure during adsorption operation in the adsorption/desorption part) = [equilibrium vapor pressure at the temperature of cold (T0) generated in the vaporization part]/[equilibrium vapor pressure at the temperature of coolant (T2) cooling the adsorption/desorption part]

(wherein T0=5 to 10°C, T1=T3=90°C, and T2=T4=40 to 45°C).

Claim 13 (Original): The adsorption heat pump as claimed in claim 12, wherein T0 is 10°C and T2 is 40°C.

Claim 14 (Original): The adsorption heat pump as claimed in claim 12, wherein T0 is 5°C and T2 is 40°C.

Claim 15 (Original): The adsorption heat pump as claimed in claim 12, wherein T0 is 10°C and T2 is 45°C.

Claim 16 (Currently Amended): The adsorption heat pump as claimed in ~~any one of claims 12 to 15, characterized in that~~ claim 12, wherein the adsorbent has a region in which the adsorption amount difference is 0.15 g/g or larger in the range in which ϕ1b and ϕ2b are from 0.115 to 0.18 and ϕ1b is equal to or higher than ϕ2b.

Claim 17 (Currently Amended): The adsorption heat pump as claimed in ~~any one of claims 12 to 16~~ claim 12, characterized in that the zeolite comprises a heteroatom in the framework structure.

Claim 18 (Currently Amended): The adsorption heat pump as claimed in claim 17, ~~characterized in that~~ wherein the proportions of aluminum, phosphorus, and the heteroatom present in the zeolite are as follows:

$$0.001 \leq x \leq 0.3$$

(x = molar proportion of the heteroatom in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leq y \leq 0.6$$

(y = molar proportion of aluminum in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leq z \leq 0.6$$

(z = molar proportion of phosphorus in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure).

Claim 19 (Currently Amended): The adsorption heat pump as claimed ~~in any one of claims 12 to 18, characterized in that~~ claim 12, wherein the zeolite is a zeolite having a framework density of from 10.0 T/1,000 $Å^3$ to 16.0 T/1,000 $Å^3$.

Claim 20 (Original): An adsorption heat pump which comprises an adsorbate, an adsorption/desorption part having an adsorbent for adsorbate adsorption/desorption, a vaporization part for adsorbate vaporization which has been connected to the adsorption/desorption part, and a condensation part for adsorbate condensation which has been connected to the adsorption/desorption part, characterized in that the adsorbent comprises a zeolite containing aluminum, phosphorus, and a heteroatom in the framework structure.

Claim 21 (Currently Amended): An adsorption heat pump which comprises (a) an adsorbate, (b) an adsorption/desorption part having an adsorbent for adsorbate adsorption/desorption, (c) a vaporization part for adsorbate vaporization which has been connected to the adsorption/desorption part, and (d) a condensation part for adsorbate condensation which has been connected to the adsorption/desorption part, ~~characterized in that~~ wherein the adsorbent comprises a zeolite containing aluminum, phosphorus, and silicon in the framework structure, and that the zeolite gives a ^{29}Si-NMR spectrum in which the

integrated intensity area for the signals at from -108 ppm to -123 ppm is not more than 10% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.

Claim 22 (Original): Use of an adsorbent as an adsorbent for an adsorption heat pump, the adsorbent being one which, when examined at 25°C, gives a water vapor adsorption isotherm which, in the relative vapor pressure range of from 0.05 to 0.30, has a relative vapor pressure region in which a change in relative vapor pressure of 0.15 results in a change in water adsorption amount of 0.18 g/g or larger.

Claim 23 (Original): The use of an adsorbent as an adsorbent for an adsorption heat pump as claimed in claim 22, wherein the adsorbent comprises a zeolite having a framework density in the range of from 10.0 T/1,000 $Å^3$ to 16.0 T/1,000 $Å^3$.

Claim 24 (Original): The use as claimed in claim 23, wherein the adsorbent is an adsorbent having a pore diameter of from 3 Å to 10 Å and a heat of adsorption of from 40 kJ/mol to 65 kJ/mol.

Claim 25 (Currently Amended): The use as claimed in ~~any one of claims 22 to 24~~ claim 22, characterized in that the adsorbent is a zeolite containing aluminum, phosphorus, and a heteroatom in the framework structure.

Claim 26 (Original): The use as claimed in claim 25, wherein the zeolite is one in which the proportions of atoms present therein are represented by the following expressions (1), (2), and (3):

$$0.001 \leq x \leq 0.3 \qquad (1)$$

(wherein x represents the molar proportion of the heteroatom in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leq y \leq 0.6 \qquad (2)$$

(wherein y represents the molar proportion of aluminum in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leq z \leq 0.6 \qquad (3)$$

(wherein z represents the molar proportion of phosphorus in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure).

Claim 27 (Currently Amended): The use as claimed in claim 25 ~~or 26~~, wherein the heteroatom is silicon.

Claim 28 (Currently Amended): The use as claimed in claim 25 ~~or 26~~, wherein the heteroatom is silicon and the zeolite gives a 29Si-MAS-NMR spectrum in which the integrated intensity area for the signals at from -108 ppm to -123 ppm is not more than 10% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.

Claim 29 (Original): The use as claimed in claim 28, wherein the zeolite gives a ^{29}Si-MAS-NMR spectrum in which the integrated intensity area for the signals at from -70 ppm to -92 ppm is not less than 25% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.

Claim 30 (Currently Amended): The use as claimed in ~~any one of claims 23 to 29~~ claim 29, wherein the zeolite is one having the structure represented by CHA in terms of the code defined by International Zeolite Association (IZA).

Claim 31 (Currently Amended): The use as claimed in ~~any one of claims 23 to 30~~ claim 23, wherein the adsorbent has a zeolite content of 60% by weight or higher based on the whole adsorbent.

Claim 32 (Currently Amended): The use as claimed in ~~any one of claims 22 to 31~~ claim 22, wherein the adsorbent, when examined at 25 °C, gives a water vapor adsorption isotherm in which the adsorption amount at a relative vapor pressure of 0.05 is 0.15 g/g or less.

Claim 33 (Original): Use of a water vapor adsorbent as an adsorbent for an adsorption heat pump, the adsorbent (1) comprising a zeolite containing aluminum and phosphorus in the framework structure and (2) having a region in which the adsorption amount difference as determined with the following equation is 0.15 g/g or larger in the range in which the relative vapor pressure $\phi 2$ during adsorption operation in an adsorption/desorption part is from 0.115 to 0.18 and the relative vapor pressure $\phi 1$ during desorption operation in the adsorption/desorption part is from 0.1 to 0.14:

Adsorption amount difference = Q2 - Q1

wherein

Q1 = adsorption amount at $\phi 1$ as determined from a water vapor desorption isotherm obtained at a temperature (T3) used for desorption operation in the adsorption/desorption part

Q2 = adsorption amount at $\phi 2$ as determined from a water vapor desorption isotherm obtained at a temperature (T4) used for desorption operation in the adsorption/desorption part,

provided that

$\phi 1$ (relative vapor pressure during desorption operation in the adsorption/desorption part) = [equilibrium water vapor pressure at the temperature of coolant (T2) cooling the condenser]/[equilibrium water vapor pressure at the temperature of heat medium (T1) heating the adsorption/desorption part]

$\phi 2$ (relative vapor pressure during adsorption operation in the adsorption/desorption part) = [equilibrium vapor pressure at the temperature of cold (T0) generated in a vaporization part]/[equilibrium vapor pressure at the temperature of coolant (T2) cooling the adsorption/desorption part]

(wherein T0=5 to 10°C, T1=T3=90°C, and T2=T4=40 to 45°C).

Claim 34 (Original): The use as claimed in claim 33, wherein T0 is 10°C and T2 is 40°C.

Claim 35 (Original): The use as claimed in claim 33, wherein T0 is 5°C and T2 is 40°C.

Claim 36 (Original): The use as claimed in claim 33, wherein T0 is 10°C and T2 is 45°C.

Claim 37 (Currently Amended): The ~~adsorption heat pump~~ use as claimed in ~~any one of claims 33 to 36~~ claim 33, characterized in that the adsorbent has a region in which the

adsorption amount difference is 0.15 g/g or larger in the range in which $\phi 1$ and $\phi 2$ are from 0.115 to 0.18 and $\phi 1$ is equal to or higher than $\phi 2$.

Claim 38 (Currently Amended): The use as claimed in ~~any one of claims 33 to 37~~ claim 33, characterized in that the zeolite contains a heteroatom in the framework structure.

Claim 39 (Original): The use as claimed in claim 38, characterized in that the proportions of aluminum, phosphorus, and the heteroatom present in the zeolite are as follows:

$$0.001 \leq x \leq 0.3$$

(x = molar proportion of the heteroatom in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \leq y \leq 0.6$$

(y = molar proportion of aluminum in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$$0.3 \quad z \quad 0.6$$

(z = molar proportion of phosphorus in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure).

Claim 40 (Currently Amended): The use as claimed in claim 38 ~~or 39~~, characterized in that the zeolite is a zeolite having a framework density of from 10.0 T/1,000 $Å^3$ to 16.0 T/1,000 $Å^3$.

Claim 41 (Currently Amended): An air conditioning system for vehicles which employs the adsorption heat pump as claimed in ~~any one of claims 1 to 21~~ claim 1.

Claim 42 (New): A method for using an absorbent which comprises heating the adsorbent having an adsorbate to desorb the adsorbate, cooling the adsorbent dried to a temperature to be used for adsorbate adsorption, and again adsorbing the adsorbate, wherein the adsorbent, when examined at 25°C, gives a water vapor adsorption isotherm which, in the relative vapor pressure range of from 0.05 to 0.30, has a relative vapor pressure region in which a change in relative vapor pressure of 0.15 results in a change in water adsorption amount of 0.18 g/g or larger.

Claim 43 (New): The method for using an absorbent as claimed in claim 42, wherein the adsorbent comprises a zeolite having a framework density in the range of from 10.0 T/1,000 $Å^3$ to 16.0 T/1,000 $Å^3$.

Claim 44 (New): The method for using an absorbent as claimed in claim 43, wherein the adsorbent is an adsorbent having a pore diameter of from 3 Å to 10 Å and a heat of adsorption of from 40 kJ/mol to 65 kJ/mol.

Claim 45 (Currently Amended) The method for using an absorbent as claimed in ~~any one of claims 42 to 44~~ claim 42, characterized in that the adsorbent is a zeolite containing at least aluminum, phosphorus, and a heteroatom in the framework structure.

Claim 46 (New): The method for using an absorbent as claimed in claim 45, wherein the zeolite is one in which the proportions of atoms present therein are represented by the following expressions (1), (2), and (3):

$$0.001 \leq x \leq 0.3 \qquad (1)$$

(wherein x represents the molar proportion of the heteroatom in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$0.3 \leq y \leq 0.6$ (2)

(wherein y represents the molar proportion of aluminum in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$0.3 \leq z \leq 0.6$ (3)

(wherein z represents the molar proportion of phosphorus in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure).

Claim 47 (Currently Amended): The method for using an absorbent as claimed in claim 45 ~~or 46~~, wherein the heteroatom is silicon.

Claim 48 (Currently Amended): The method for using an absorbent as claimed in claim 45 ~~or 46~~, wherein the heteroatom is silicon and the zeolite gives a ^{29}Si-MAS-NMR spectrum in which the integrated intensity area for the signals at from -108 ppm to -123 ppm is not more than 10% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.

Claim 49 (New): The method for using an absorbent as claimed in claim 48, wherein the zeolite gives a ^{29}Si-MAS-NMR spectrum in which the integrated intensity area for the signals at from -70 ppm to -92 ppm is not less than 25% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.

Claim 50 (Currently Amended): The method for using an absorbent as claimed in ~~any one of claims 43 to 49~~ claim 43, wherein the zeolite is one having the structure represented by CHA in terms of the code defined by International Zeolite Association (IZA).

Claim 51 (Currently Amended): The method for using an absorbent as claimed in ~~any one of claims 43 to 50~~ claim 43, wherein the adsorbent has a zeolite content of 60% by weight or higher based on the whole adsorbent.

Claim 52 (Currently Amended): The method for using an absorbent as claimed in ~~any one of claims 42 to 51~~ claim 42, wherein the adsorbent, when examined at 25°C, gives a water vapor adsorption isotherm in which the adsorption amount at a relative vapor pressure of 0.05 is 0.15 g/g or less.

Claim 53 (New): A method for using an absorbent which comprises heating the adsorbent having an adsorbate to desorb the adsorbate, cooling the adsorbent dried to a temperature to be used for adsorbate adsorption, and again adsorbing the adsorbate,

characterized in that

(1) the adsorbent comprises a zeolite containing aluminum and phosphorus in the framework structure, and

(2) the adsorbent is a water vapor adsorbent having a region in which the adsorption amount difference as determined with the following equation is 0.15 g/g or larger in the range in which the relative vapor pressure $\phi 2b$ during adsorption operation in the adsorption/desorption part is from 0.115 to 0.18 and the relative vapor pressure $\phi 1b$ during desorption operation in the adsorption/desorption part is from 0.1 to 0.14: Adsorption amount difference = Q2 - Q1

wherein

Ql = adsorption amount at ϕ1b as determined from a watervapor desorption isotherm obtained at a temperature (T3) used for desorption operation in the adsorption/desorption part

Q2 = adsorption amount at ϕ2b as determined from a water vapor adsorption isotherm obtained at a temperature (T4) used for adsorption operation in the adsorption/desorption part,

provided that

ϕ1b (relative vapor pressure during desorption operation in the adsorption/desorption part) = [equilibrium water vapor pressure at the temperature of coolant (T2) cooling the condenser]/[equilibrium water vapor pressure at the temperature of heat medium (T1) heating the adsorption/desorption part]

ϕ2b (relative vapor pressure during adsorption operation in the adsorption/desorption part) = [equilibrium vapor pressure at the temperature of cold (TO) generated in the vaporization part]/[equilibrium vapor pressure at the temperature of coolant (T2) cooling the adsorption/desorption part] (wherein TO=5 to 10°C, Tl=T3=90°C, and T2=T4=40 to 45°C).

Claim 54 (New): The method for using an absorbent as claimed in claim 53, wherein TO is 10°C and T2 is 40°C.

Claim 55 (New): The method for using an absorbent as claimed in claim 53, wherein TO is 5°C and T2 is 40°C.

Claim 56 (New): The method for using an absorbent as claimed in claim 53, wherein TO is 10°C and T2 is 45°C.

Claim 57 (Currently Amended): The method for using an absorbent as claimed in ~~any one of claims 53 to 56~~ claim 53, characterized in that the adsorbent has a region in which the adsorption amount difference is 0.15 g/g or larger in the range in which ϕ1b and ϕ2b are from 0.115 to 0.18 and ϕ1b is equal to or higher than ϕ2b.

Claim 58 (Currently Amended): The method for using an absorbent as claimed in ~~any one of claims 53 to 57~~ claim 53, characterized in that the zeolite comprises a heteroatom in the framework structure.

Claim 59 (New): The method for using an absorbent as claimed in claim 58, characterized in that the proportions of aluminum, phosphorus, and the heteroatom present in the zeolite are as follows:

$0.001 \leq x \leq 0.3$

(x =molar proportion of the heteroatom in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$0.3 \leq y \leq 0.6$

(y = molar proportion of aluminum in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure);

$0.3 \leq z \leq 0.6$

(z = molar proportion of phosphorus in the framework structure to the sum of aluminum, phosphorus, and the heteroatom in the framework structure).

Claim 60 (Currently Amended): The method for using an absorbent as claimed in ~~any one of claims 53 to 59~~ claim 53, characterized in that the zeolite is a zeolite having a framework density of from 10.0 T/1,000 $Å^3$ to 16.0 T/1,000 $Å^3$.

Claim 61 (New): A method for using an absorbent which comprises heating the adsorbent having an adsorbate to desorb the adsorbate, cooling the adsorbent dried to a temperature to be used for adsorbate adsorption, and again adsorbing the adsorbate, characterized in that the adsorbent comprises a zeolite containing aluminum, phosphorus, and a heteroatom in the framework structure.

Claim 62 (New): A method for using an absorbent which comprises heating the adsorbent having an adsorbate to desorb the adsorbate, cooling the adsorbent dried to a temperature to be used for adsorbate adsorption, and again adsorbing the adsorbate, characterized in that the adsorbent comprises a zeolite containing aluminum, phosphorus, and silicon in the framework structure, and that the zeolite gives a ^{29}Si-NMR spectrum in which the integrated intensity area for the signals at from -108 ppm to -123 ppm is not more than 10% based on the integrated intensity area for the signals at from -70 ppm to -123 ppm.